

WE CLAIM:

1. A moment-resistant column/beam structural system comprising
an elongate column,
an elongate beam, and

5 collar structure connecting an end of said beam to said column in a manner
whereby moment loads are transferred between the beam and the column via
compression through plural, confronting bearing faces that are distributed angularly about
the long axis of the column.

2. The structural system of claim 1, wherein said collar structure includes a
column-attachable (CA) member attached to said column, and a beam-end-attachable
member (BA) attached to said beam and floatingly seated principally under the influence
of gravity on said CA member.

3. A self-stabilizing, moment-resistant, collar-form, elongate-column/elongate-beam interconnect structure for use in a building comprising

a collar-form column-attachable (CA) member including plural interconnection bearing faces; and

5 a collar-form beam-end-attachable (BA) member including plural interconnection bearing faces,

said CA and BA members being constructed for seated interconnection in a manner whereby gravity causes their respective bearing faces to seat self-seekingly and complementarily relative to one another in confronting, bearing-face opposition, thereby to establish nominal, three-dimensional, positional and moment-resistant stability between the two members without the requirement for any other interconnecting structure.

4. The interconnect structure of claim 3, wherein said CA and BA members include complementarily mateable cleat and socket structure.

7. A building structure restable on an external support structure comprising a plurality of upright columns distributed, as seen in plan view, in a row-and-column array, with columns in said array intended to act as load-transfer elements for the transfer of all loads from the building structure to the external support structure,

5 a plurality of generally horizontal beams, each extending between different respective pairs of said columns, and

multi-axial, three-dimensional, moment-resistant, collar-form interconnect structure operatively interconnecting said columns and beams at locations of adjacency therebetween in such a manner that all loads introduced into the building structure are borne substantially throughout the full population of columns and beams, and specifically in a manner whereby such loads are delivered to and responsively shared by all of the load-transferring columns.

8. Moment-resistant, spatial-position-determining and stabilizing interconnect structure for interconnecting, during the preliminary construction of a building, the end of an elongate, generally horizontal beam to an elongate, generally upright column, said interconnect structure, in operative condition, comprising

a first, inner, interconnect collar structure anchored to such a column circumsurroundingly relative to the column's long axis, and including first, gravity-utilizing, bearing-face substructure, and

second, outer, interconnect collar structure anchored adjacent the end of such a beam, and including second, gravity-utilizing, bearing-face substructure,

said second, bearing-face substructure being seatingly mateable, under the influence of gravity, on and with respect to said first bearing-face substructure during preliminary building construction to establish a gravity-locked and stabilized, moment-resistant interconnection between the associated column and beam, which interconnection tends to create, independently, the correct spatial disposition of the column and beam in the building.

9. A column/beam, moment-load-handling method comprising preparing an elongate column, at a selected location along its length, with plural, compression-reception bearing surfaces distributed at plural, different locations spaced angularly about the column's long axis,

5 adjacent the column's mentioned selected location, coupling an end of an elongate beam thereto through plural, compression-delivery bearing surfaces which bear against, but which are separate from, different ones of the first-mentioned bearing surfaces, and

with respect to moment loads that are experience by the beam, delivering such loads to the column via compression developed simultaneously between plural ones of the compression-reception and the compression-delivery bearing surfaces.

10. Moment-resistant interconnect structure for establishing a three-dimensional, multi-axial, moment-coupling, load-transfer interconnection and interaction between an elongate column and an elongate beam, said interconnect structure comprising

inner collar structure selectively anchorable to such a column circumsurroundingly relative to the column's long axis, and

outer collar structure selectively joinable to an end of such a beam, and constructed for discontinuous, circumsurrounding, bearing-face coupling to said inner collar structure for the compression transfer of moment loads between the associated beam and column.

152
5239 625
11. A moment-resistant, bearing-face, load-transfer interconnection between an elongate column and an elongate beam, said interconnection, in operative condition, comprising

6
a first bearing-face structure joined to such a column to form an inner collar structure which generally circumsurrounds the column's long axis, said first bearing-face structure including plural bearing faces each facing outwardly relative to, and at different locations spaced angularly about, the column's long axis,

12
second bearing-face structure joined to an end in such a beam to form an outer collar structure which also generally circumsurrounds the column's long axis, and which is disposed as a jacket surrounding said inner collar structure, said second bearing-face structure including plural bearing faces each opposingly facing at least one of said bearing faces in said first bearing-face structure, and

10, 11
connector structure operatively connecting said first and second bearing-face structures in a manner whereby the opposing bearing faces in said first and second bearing-face structures confrontingly oppose one another to promote compression load transfer therebetween, and thus between the column and the beam, with such load transfer being derived from moment loads carried in said beam.

12. Gravity-lock, self-positioning and stabilizing, moment-frame building structure comprising

plural elongate columns each equipped, at one or more locations along their respective lengths, with axially circumsurrounding inner collar structure which includes first-gender, gravity-effective cleat structure,

plural elongate beams each attached, adjacent opposite ends, to outer collar structure which includes second-gender, gravity-effective cleat structure that is mateable, under the influence of gravity, complementarily with said first-gender cleat structure,

gravity-mating of said first- and second-gender cleat structures creating therebetween, and thus between the associated column and beam, a gravity-locked, stabilized, correctly relatively positioned, moment-resistant interconnection between that column and beam.

13. A moment-resistant column/beam structural system comprising
a column,

a beam, and

interconnect structure operatively interposed and interconnecting an end of the beam to the column in a manner whereby moment loads born by the beam are delivered to the column substantially solely through the interconnect structure, and simultaneously at plural regions that are distributed angularly about the long axis of the column.

14 A multi-axial, two-dimensional, moment-resistant building structure including plural columns, plural beams, and plural interconnect collars which interconnect adjacent columns and beams at nodes, whereby all loads introduced into the structure are distributed and borne throughout the entire structure.

15 The building structure of claim 14, wherein said collars are configured whereby moment loads present in beams are distributed to the columns through the collars in the form of bearing-face compression.